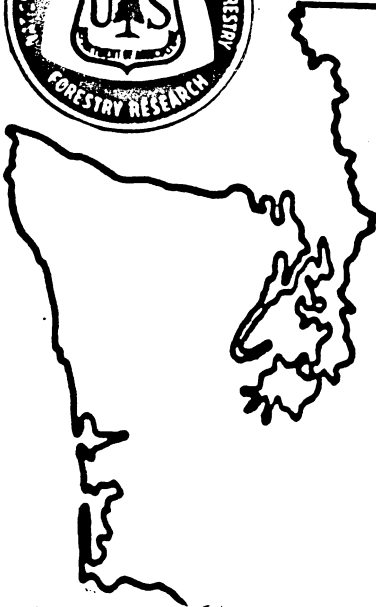


# *Forest Pest Management* *Pacific Northwest Region*

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LARCH DWARF MISTLETOE SURVEY  
OF THE  
SISTERS RANGER DISTRICT  
DESCHUTES NATIONAL FOREST  
OREGON



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LARCH DWARF MISTLETOE SURVEY OF THE  
SISTERS RANGER DISTRICT, DESCHUTES  
NATIONAL FOREST

by

Craig L. Schmitt

Introduction

Western larch (*Larix occidentalis*) is a valuable tree species occurring over extensive areas of eastern Washington and the northern half of eastern Oregon. The southernmost part of its natural range is within the Deschutes National Forest on the Sisters Ranger District. Larch is important both for timber production and recreation settings.

Larch dwarf mistletoe (*Arceuthobium laricis*), an infectious parasitic plant, occurs throughout the natural range of western larch. High rates of infection have been reported throughout the larch timber type (Hawksworth and Wiens 1972). Infection rates of 54.5 and 65.5 percent are reported for small sawtimber and large sawtimber, respectively, in Oregon and Washington forests (Bolsinger 1978). These are the highest rates of dwarf mistletoe infection of any tree species in the Region.

Larch dwarf mistletoe (Plate 1) damages its host in several ways. It impairs the tree's photosynthate production and utilization, reducing growth rates and vigor. Weakened trees are susceptible to insects and other diseases. More often dwarf mistletoe will kill larch outright. Suppressed trees and trees growing on poor sites are in the greatest danger since their slow height growth allows the parasites to spread easily to the upper crown. Trees with a severe level of dwarf mistletoe infection will exhibit a marked reduction in height growth, hastening spread throughout the crown. Witches'-brooms usually develop on severely infected branches which die and break off over time, leaving the tree little more than the bole with small tufts of branches for a crown (Plate 2). Trees in this condition usually die within a few years. Mistletoe-infected trees often develop large, deformed branches and abnormal stem growths. Along with reduced growth and increased mortality rates, heavily infected larch have reduced cone and seed yield.

In campgrounds, recreation areas and in the vicinity of summer homes, the presence of larch enhances the aesthetic quality of the site, especially in the fall when the foliage turns golden yellow. This benefit is diminished where larch are moderately or heavily infected with dwarf mistletoe due to the resulting sparse crowns, "witches'-brooms," dead tops, cankers and dead trees. Increased mortality occurs in these stands. High levels of dwarf mistletoe infection also result in increasing numbers of hazard trees on the site. Dead brooms, branches, tops and trees can cause property damage, personal injury or death upon failure.

Other pests of larch can cause foliage damage which diminishes its aesthetic quality. Two needlecast diseases caused by the fungi, *Meria laricis* and *Hypodermella laricis*, can be common. An insect, the larch casebearer, *Coleophora laricella*, is a needle feeder which can cause premature defoliation in the early spring. Repeated attacks over several years reduce growth rates and tree vigor. All of these pests occur on larch on the Sisters Ranger District.

Heavy dwarf mistletoe infection rates have been observed in many larch stands on the Sisters Ranger District, Deschutes National Forest. Some of these stands occur in heavily used recreation areas, including campgrounds, summer home areas and the visual corridor along the Metolius River. Heavily infected larch has also been observed in stands managed for their timber resource throughout the District.

At the request of the Sisters Ranger District, a survey was conducted during the period from July 28 to August 7, 1981 to answer specific management questions concerning larch dwarf mistletoe on the District.

### Objectives

Objectives of this evaluation were to answer management questions asked by District personnel:

- (1) What are mistletoe infection levels in stands containing greater than 1 percent BA in larch on the District?
- (2) Can these stands be stratified based on stand composition expressed in terms of percent basal area in larch and intensity of dwarf mistletoe infection?
- (3) What are recommended silvicultural treatments to minimize adverse impacts due to dwarf mistletoe and perpetuate larch in these stands while considering current land use objectives?
- (4) What are priorities for stand treatment based on mistletoe infection levels and other information?

### Methods

Several sources were used to identify both the extent of larch on the Sisters Ranger District (Figure 1) and individual stands where 1 percent or greater of the basal area was larch.

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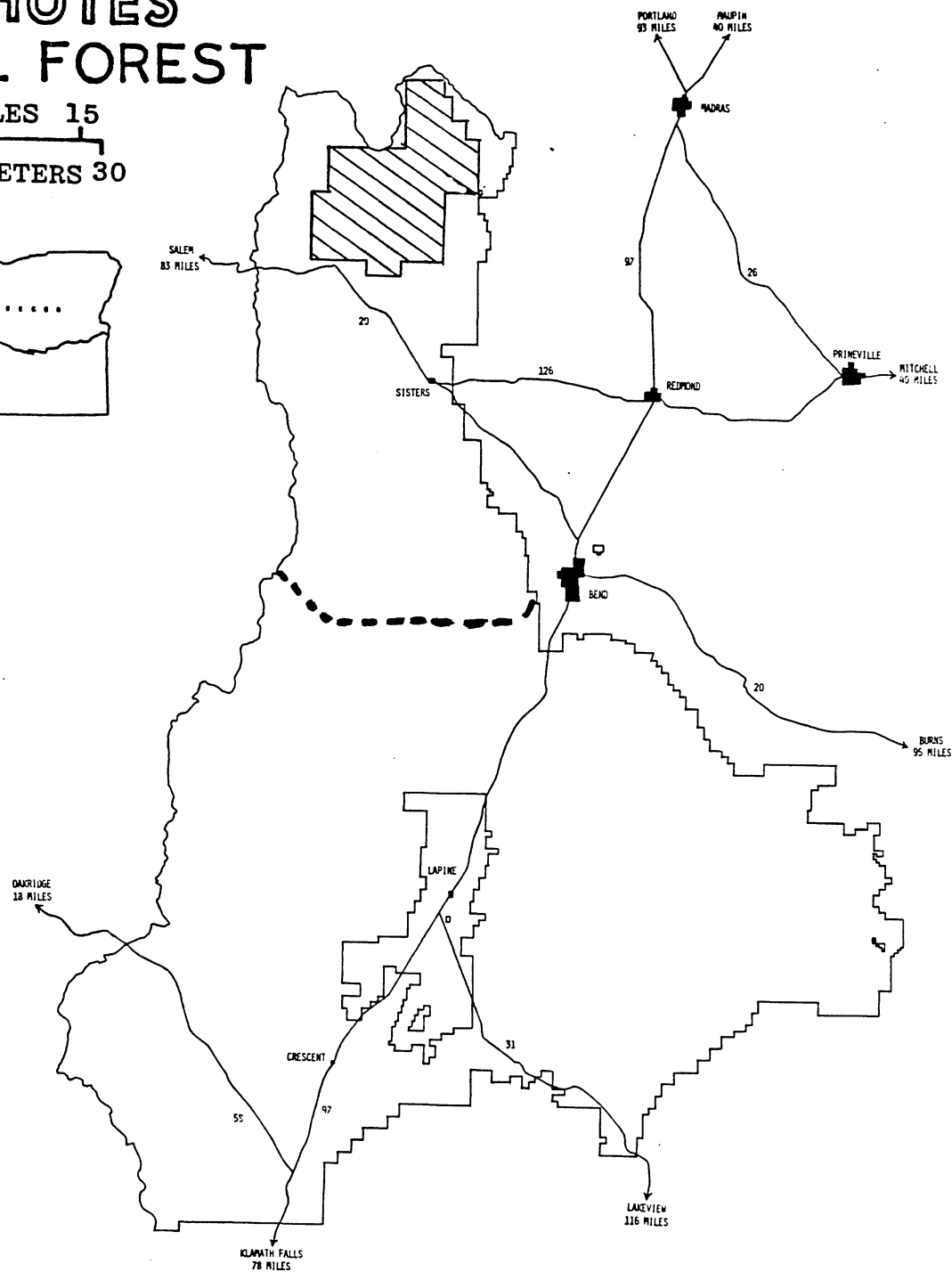
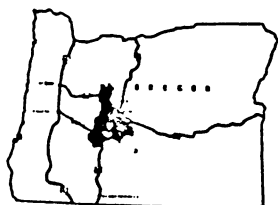


Figure 1--Map depicting location of survey area (cross hatching). Dotted line indicates southern boundary of the Sisters Ranger District.

District personnel provided information identifying the extent of larch in the area based on personal observations in the past. The Deschutes National Forest Soil Resource Inventory (Larsen 1976) was used to identify those land types which list larch as a major species in the overstory. In addition, a map provided by the Deschutes National Forest Land Management Planning Department indicating plant community classifications (Volland 1975) was used to identify stands with a larch component.

A variety of habitat types are present in the survey area. While most are various mixed conifer and pine types, only a few contain a significant larch component. These include the mixed conifer/snowberry/pinegrass, mixed conifer/snowbrush-chinkapin/pinegrass, and mixed conifer/snowberry/twinflower flatlands (Volland 1975).

The survey was done by driving throughout the portion of the District where a significant (>1% B.A.) proportion of larch was expected to exist (Figures 2, 3). Upon identifying an individual stand meeting the criterion, the following information was recorded:

1. Stand boundaries

Stand boundaries were drawn on a 1:31680 scale contour map following foot and vehicle travel throughout to assure relative homogeneity.

2. Stand location

The legal description to section(s) was recorded.

3. Acreage

Approximate stand acreages were determined from digitizing boundaries drawn on the 1:31680 contour map.

4. Mistletoe level

Four levels of dwarf mistletoe infection were considered. These were based on the six-point system developed by Hawksworth (1977). Trees rated "0" or healthy had no infection. Trees with a Low (L) rating earned a 1 or 2, Medium (M) a 3 or 4, and High (H) a 5 or 6 in the six point system. The percentage of larch basal area falling into each of these levels was based on estimates made while observing the stand.

5. Size Class Classification

The larch component was assigned to three size categories: Immature (dbh <9.0"), Mature (9.0-20.0" dbh), and Overmature (>20.0" dbh). The percentage of basal area falling into each category was estimated.

6. Stand Composition

Species composition was recorded by percent basal area based on visual estimates.

7. Land Use

Based on current land use, the percentage of the stand area falling into predominantly timber use or predominantly recreation use was recorded. While District lands support a number of resource uses, these two were considered most important in the survey area.

#### 8. Recommended Treatment

Different silvicultural treatments were developed to treat the total range of larch stands on the Sisters District. These management objectives and broad treatments include:

A. To maintain larch in the Metolius River-Camp Sherman recreational areas.

- (1) Restrict removal only to dead, dying and hazard trees.
- (2) Minimize the spread, and when possible, decrease the level of dwarf mistletoe in these stands.
- (3) Minimize mortality.
- (4) Maintain or increase the larch component in these stands.

B. To increase the timber management opportunities for larch in the District:

- (1) Increase the larch component in stands when and where possible.
- (2) Improve growth rates by regulating stocking levels.

#### 9. Priority of Treatment

Stand condition and location dictate treatment priority. Stands that are in areas where the recreation resource is of highest concern have a different set of priorities than those areas managed primarily for timber production.

Priorities were developed based on need and urgency of treatment. Within timber producing lands, priorities were established based on age classes present and stand condition. Highest priorities for treatment are given to stands where mortality is occurring and in stands needing an overstory removal to protect a healthy understory from dwarf mistletoe infection.

In recreational areas priorities were based upon stand condition with only the larch component being considered.

A priority value of 1 is highest and 5 is lowest.

#### Timber Lands

Priority 1 - a. Mortality is occurring in mature-overmature timber due to dwarf mistletoe infection.

- b. An infected mature-overmature overstory of larch is overtopping a fully stocked and manageable understory.

Priority 2 - a. Mature stands with manageable acreage of lands averaging a high dwarf mistletoe rating.

b. Overmature stands with manageable acreage of larch averaging a medium dwarf mistletoe rating.

c. Immature stands containing infected larch which would benefit from thinning (either precommercial or commercial).

Priority 3 - a. Mature stands with manageable acreage of larch averaging a medium dwarf mistletoe rating.

b. Overmature stands with a low average mistletoe rating.

Priority 4 - Immature to mature stands with a low average dwarf mistletoe rating.

Priority 5 - Immature stands that are healthy or have minimal infection.

Recreation Lands, Summer Home Areas, and Campgrounds.

Priority 1 - a. Dead and dying trees in sensitive areas.

b. Trees in sensitive areas with large, dead brooms and/or stem cankers.

c. Infected overstory trees overtopping a well-stocked understory of larch.

Priority 2 - Heavily infected trees in stands containing a substantial healthy or lightly-infected component of larch.

Priority 3 - Heavily infected trees in stands with few healthy or lightly-infected trees.

Priority 4 - Stands with medium infection levels.

Priority 5 - Healthy stands or stands with low infection levels.

Results and Discussion

In the 87,680 acres surveyed, approximately 18,414 acres were identified as containing a larch component (see Figure 1, 2 or 3). This represents a total of 63 stands and 5 campgrounds (Table A and Figures 2 and 3).

## TABLE A--STAND SUMMARIES

STAND NO. 1Location T 13S R 9E Sec. 26, 27, 35Acres (est.) 960Recommended Treatment: SPriority: (Timber) 3 (Recreation) -

Stand Composition (% BA of total):

Larch 0-15 % P. pine 60-75 %D. fir 25-40 % G. fir 20 %Incense cedar        % Other        %Mistletoe Level DMR % of Larch0 0 35Low 1-2 35Med 3-4 20High 5-6 10Timber (Larch):Immature 60 % Mature 30 % Overmature 10 %

Land Use:

Timber 100 % Recreation - %

Douglas-fir component is heavily infected with dwarf mistletoe.

STAND NO. 2Location T 13S R 9E Sec. 17Acres (est.) 425Recommended Treatment: SPriority: (Timber) 3 (Recreation) -

Stand Composition (% BA of total):

Larch 10 % P. pine 80 %D. fir 5 % G. fir 5 %Incense cedar        % Other        %Mistletoe Level DMR % of Larch0 0 20Low 1-2 40Med 3-4 20High 5-6 20Timber (Larch):Immature 60 % Mature 25 % Overmature 15 %

Land Use:

Timber 100 % Recreation - %



STAND NO. 3

Location T 13S R 9E Sec. 9, 15, 16

Acres (est.) 960

Recommended Treatment: U

Priority: (Timber) 1 (Recreation) 1

Stand Composition (% BA of total):

Larch 50 % P. pine 50 %

D. fir T % G. fir T %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              20

Low                   1-2              25

Med                   3-4              20

High                  5-6              35

Timber (Larch):

Immature 30 % Mature 60 % Overmature 10 %

Land Use:

Timber 50 % Recreation 50 %

STAND NO. 4

Location T T13S R 8, 9E Sec. 1,12,13+7,8,17,18 Stand Composition (% BA of total):

Acres (est.) 1200

Recommended Treatment: S

Priority: (Timber) 3 (Recreation) -

Larch 5-10 % P. pine 20-30 %

D. fir 30 % G. fir 30 %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              40

Low                   1-2              20

Med                   3-4              20

High                  5-6              20

Timber (Larch):

Immature 70 % Mature 25 % Overmature 5 %

Land Use:

Timber 100 % Recreation - %

STAND NO. 5

Location T 13S R 9E Sec. 9,10,15

Acres (est.) 440

Recommended Treatment: R

Priority: (Timber) - (Recreation) 1

Stand Composition (% BA of total):

Larch 60 % P. pine 40 %

D. fir        % G. fir        %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              30-40

Low                   1-2              15

Med                   3-4              15

High                  5-6              30-40

Mortality occurring in some older, heavily infected larch.

Timber (Larch):

Immature 30 % Mature 50 % Overmature 20 %

Land Use:

Timber - % Recreation 100 %

STAND NO. 6

Location T 13S R 9E Sec. 3,4,9,10

Acres (est.) 400

Recommended Treatment: J

Priority: (Timber) 4 (Recreation) 4

Stand Composition (% BA of total):

Larch 25-35 % P. pine 65-75 %

D. fir        % G. fir        %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              55

Low                   1-2              30

Med                   3-4              10

High                  5-6              5

Timber (Larch):

Immature 30 % Mature 65 % Overmature 5 %

Land Use:

Timber 25 % Recreation 75 %

STAND NO. 7

Location T 12+13SR 9E Sec. 33+3,4,5,8,9,

Acres (est.) 680

Recommended Treatment: K

Priority: (Timber) 1 (Recreation) 3

Mistletoe Level      DMR      % of Larch

0                      0              10-20

Low                    1-2              10-20

Med                    3-4              30

High                   5-6              40-50  
Partial cutting is now occurring.

Stand Composition (% BA of total):

Larch 40-50 % P. pine 40-55 %

D. fir 5 % G. fir 5 %

Incense cedar \_\_\_\_\_ % Other \_\_\_\_\_ %

Timber (Larch):

Immature 20 % Mature 40 % Overmature 40 %

Land Use:

Timber 90 % Recreation 10 %

STAND NO. 8

Location T 13S R 9E Sec. 4,8,9

Acres (est.) 385

Recommended Treatment: S

Priority: (Timber) 3 (Recreation) -

Mistletoe Level      DMR      % of Larch

0                      0              35

Low                    1-2              30

Med                    3-4              20

High                   5-6              10-20  
Partial cutting is now occurring.

Stand Composition (% BA of total):

Larch 40-60 % P. pine 40-60 %

D. fir \_\_\_\_\_ % G. fir \_\_\_\_\_ %

Incense cedar \_\_\_\_\_ % Other \_\_\_\_\_ %

Timber (Larch):

Immature 40 % Mature 45 % Overmature 15 %

Land Use:

Timber 100 % Recreation - %

STAND NO. 9

Location T 13S R 8E Sec. 1, 2

Acres (est.) 300

Recommended Treatment: S

Priority: (Timber) 2 (Recreation) -

Stand Composition (% BA of total):

Larch 5-10 % P. pine 20 %

D. fir 20 % G. fir 50 %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              15

Low                   1-2              20

Med                   3-4              15

High                   5-6              50

Timber (Larch):

Immature 45 % Mature 50 % Overmature 5 %

Land Use:

Timber 100 % Recreation - %

Douglas-fir is heavily infected with dwarf mistletoe.

STAND NO. 10

Location T 12+13S R 8+9E Sec. 31, 36, 1, 6

Acres (est.) 300

Recommended Treatment: S

Priority: (Timber) 2 (Recreation) 4

Stand Composition (% BA of total):

Larch 2-10 % P. pine 10-15 %

D. fir 10-20 % G. fir 50-60 %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              20

Low                   1-2              15

Med                   3-4              25

High                   5-6              35

Timber (Larch):

Immature 35 % Mature 55 % Overmature 10 %

Land Use:

Timber 90 % Recreation \*10 %

\*Head of Jack Creek

STAND NO. 11

Location T 12S R 9E Sec. 31

Acres (est.) 150

Recommended Treatment: S

Priority: (Timber) 2 (Recreation) -

Stand Composition (% BA of total):

Larch 2-10 % P. pine 10-15 %

D. fir 10-20 % G. fir 50-60 %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              20

Low                   1-2              15

Med                   3-4              25

High                  5-6              35

Timber (Larch):

Immature 35 % Mature 55 % Overmature 10 %

Land Use:

Timber 100 % Recreation - %

Douglas-fir is heavily infected with dwarf mistletoe.

STAND NO. 12

Location T 12S R 8+9E Sec. 35,36,+31

Acres (est.) 400

Recommended Treatment: S

Priority: (Timber) 2 (Recreation) -

Stand Composition (% BA of total):

Larch 2-5 % P. pine 10 %

D. fir 40 % G. fir 50 %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              20

Low                   1-2              15

Med                   3-4              25

High                  5-6              35

Timber (Larch):

Immature 35 % Mature 55 % Overmature 10 %

Land Use:

Timber 100 % Recreation - %

Douglas-fir is heavily infected with dwarf mistletoe.

STAND NO. 14

Location T 12S R 8+9E Sec. 25+30, 31

Acres (est.) 450

Recommended Treatment: S

Priority: (Timber) 1 (Recreation) -

Stand Composition (% BA of total):

Larch 5 % P. pine 10 %

D. fir 40 % G. fir 45 %

Incense cedar      % Other      %

Mistletoe Level      DMR      % of Larch

0                      0              10

Low                   1-2              5

Med                   3-4              15

High                  5-6              70

Timber (Larch):

Immature 5 % Mature 20 % Overmature 75 %

Land Use:

Timber 100 % Recreation      %

Mortality is occurring in larch due to heavy dwarf mistletoe infections.

STAND NO. 15

Location T 12S R 8E Sec. 24, 25

Acres (est.) 80

Recommended Treatment: S

Priority: (Timber) 1 (Recreation) -

Stand Composition (% BA of total):

Larch 5 % P. pine 10 %

D. fir 40 % G. fir 45 %

Incense cedar      % Other      %

Mistletoe Level      DMR      % of Larch

0                      0              10

Low                   1-2              5

Med                   3-4              15

High                  5-6              70

Timber (Larch):

Immature 5 % Mature 20 % Overmature 75 %

Land Use:

Timber 100 % Recreation      %

Mortality is occurring in larch due to heavy dwarf mistletoe infections.

STAND NO. 16

Location T 12S R 9E Sec. 19,24,25,30

Acres (est.) 440

Recommended Treatment: L

Priority: (Timber) 1 (Recreation) -

Stand Composition (% BA of total):

Larch 25 % P. pine 20 %

D. fir 30 % G. fir 25 %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              5

Low                   1-2             10

Med                   3-4             10

High                  5-6             75

Timber (Larch):

Immature 10 % Mature 30 % Overmature 60 %

Land Use:

Timber 100 % Recreation - %

STAND NO. 17

Location T 12S R 9E Sec 18,19,20,29,30

Acres (est.) 465

Recommended Treatment: G

Priority: (Timber) 3 (Recreation) 4

Stand Composition (% BA of total):

Larch 5-10 % P. pine 40 %

D. fir 40 % G. fir 10-15 %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              20

Low                   1-2             35

Med                   3-4             30

High                  5-6             15

Timber (Larch):

Immature 50 % Mature 40 % Overmature 10 %

Land Use:

Timber 90 % Recreation 10\* %

\*Sheep springs.

STAND NO. 18

Location T 12S R 8+9E Sec. 11, 12+7

Acres (est.) 155

Recommended Treatment: D

Priority: (Timber) 4 (Recreation) -

Stand Composition (% BA of total):

Larch 50 % P. pine 10 %

D. fir 30 % G. fir 20 %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              30

Low                   1-2              30

Med                   3-4              30

High                  5-6              10

Stand is unroaded.

Timber (Larch):

Immature 55 % Mature 40 % Overmature 5 %

Land Use:

Timber 100 % Recreation - %

STAND NO. 19

Location T 11+12S R 9E Sec. 33+3,4

Acres (est.) 265

Recommended Treatment: G

Priority: (Timber) 4 (Recreation) -

Stand Composition (% BA of total):

Larch 5-10 % P. pine 20 %

D. fir 30 % G. fir 40 %

Incense cedar T % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              30

Low                   1-2              30

Med                   3-4              30

High                  5-6              10

Timber (Larch):

Immature 40 % Mature 50 % Overmature 10 %

Land Use:

Timber 100 % Recreation - %



STAND NO. 20

Location T 12S R 9E Sec. 3

Acres (est.) 70

Recommended Treatment: G

Priority: (Timber) 4 (Recreation) -

Stand Composition (% BA of total):

Larch 5-10 % P. pine 20 %

D. fir 30 % G. fir 40 %

Incense cedar T % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              30

Low                   1-2              30

Med                   3-4              30

High                  5-6              10

Timber (Larch):

Immature 40 % Mature 50 % Overmature 10 %

Land Use:

Timber 100 % Recreation - %

STAND NO. 21

Location T 12S R 9E Sec. 2, 3

Acres (est.) 200

Recommended Treatment: 0

Priority: (Timber) 3 (Recreation) -

Stand Composition (% BA of total):

Larch 5-10 % P. pine 40 %

D. fir 40 % G. fir        %

Incense cedar 5 % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              25

Low                   1-2              50

Med                   3-4              15

High                  5-6              10

Timber (Larch):

Immature 25 % Mature 50 % Overmature 25 %

Land Use:

Timber 100 % Recreation        %

STAND NO. 22

Location T 12S R 9E Sec. 3, 10

Acres (est.) 170

Recommended Treatment: P

Priority: (Timber) 1 (Recreation) 1

Stand Composition (% BA of total):

Larch 10-20 % P. pine 70 %

D. fir 10-15 % G. fir        %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              10

Low                   1-2              20-30

Med                   3-4              20

High                  5-6              40-50

Timber (Larch):

Immature 30 % Mature 40 % Overmature 30 %

Land Use:

Timber 80 % Recreation 20 %

Mortality is occurring in larch due to heavy dwarf mistletoe infection.

STAND NO. 23

Location T 12S R 9E Sec. 21, 27, 28, 29

Acres (est.) 350

Recommended Treatment: J

Priority: (Timber) 2 (Recreation) 2

Stand Composition (% BA of total):

Larch 50 % P. pine 50 %

D. fir        % G. fir        %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              20

Low                   1-2              20

Med                   3-4              20

High                  5-6              40

Timber (Larch):

Immature 20 % Mature 20 % Overmature 60 %

Land Use:

Timber 70 % Recreation 30 %

STAND NO. 24

Location T 12S R 9E Sec. 7,8,9,17,18,20

Acres (est.) 1,440

Recommended Treatment: L

Priority: (Timber) 1 (Recreation) -

Stand Composition (% BA of total):

Larch 5 % P. pine 5 %

D. fir 40 % G. fir 40 %

Incense cedar      % Other 5 %

Mistletoe Level      DMR      % of Larch

0                      0                      5

Low                    1-2                    10

Med                    3-4                    10

High                   5-6                    80

Timber (Larch):

Immature - % Mature 50 % Overmature 50 %

Land Use:

Timber 100 % Recreation - %

STAND NO. 25

Location T 12S R 9E Sec. 29, 30, 31, 32

Acres (est.) 225

Recommended Treatment: C

Priority: (Timber) 4 (Recreation) -

Stand Composition (% BA of total):

Larch 10 % P. pine 85 %

D. fir 5 % G. fir T %

Incense cedar      % Other      %

Mistletoe Level      DMR      % of Larch

0                      0                      50

Low                    1-2                    30

Med                    3-4                    20

High                   5-6                    10

Timber (Larch):

Immature 60 % Mature 35 % Overmature 5 %

Land Use:

Timber 100 % Recreation      %

STAND NO. 26

Location T 11S R 8+9 Sec. 36+31

Acres (est.) 120

Recommended Treatment: P

Priority: (Timber) 1 (Recreation) 1

Stand Composition (% BA of total):

Larch 5 % P. pine 5 %

D. fir 40 % G. fir 50 %

Incense cedar        % Other        %

Mistletoe Level     DMR     % of Larch

0                      0             25

Low                   1-2           20

Med                   3-4           25

High                  5-6           30

Timber (Larch):

Immature 25 % Mature 50 % Overmature 25 %

Land Use:

Timber 80 % Recreation 20\* %

\*Cabot Lake trailhead  
Some mortality is occurring.

STAND NO. 27

Location T 11+12S R 8E Sec. 36+1

Acres (est.) 55

Recommended Treatment: S

Priority: (Timber) 2 (Recreation) -

Stand Composition (% BA of total):

Larch 0-5 % P. pine 5 %

D. fir 40 % G. fir 55 %

Incense cedar        % Other        %

Mistletoe Level     DMR     % of Larch

0                      0             25

Low                   1-2           20

Med                   3-4           25

High                  5-6           30

Timber (Larch):

Immature 25 % Mature 50 % Overmature 25 %

Land Use:

Timber 100 % Recreation - %

STAND NO. 28

Location T 11 R 8+9 Sec. 1+6

Acres (est.) 135

Recommended Treatment: S

Priority: (Timber) 2 (Recreation) -

Stand Composition (% BA of total):

Larch 5 % P. pine 5 %

D. fir 40 % G. fir 55 %

Incense cedar      % Other      %

Mistletoe Level      DMR      % of Larch

0                      0              25

Low                   1-2              20

Med                   3-4              25

High                  5-6              30

Timber (Larch):

Immature 25 % Mature 50 % Overmature 25 %

Land Use:

Timber 100 % Recreation - %

Douglas-fir is heavily infected with dwarf mistletoe.

STAND NO. 29

Location T 12S R 10E Sec. 17,19,20,22,23,29 Stand Composition (% BA of total):

Acres (est.) 680

Recommended Treatment: G

Priority: (Timber) 3 (Recreation) -

Larch 10 % P. pine 10 %

D. fir 40 % G. fir 40 %

Incense cedar      % Other      %

Mistletoe Level      DMR      % of Larch

0                      0              30

Low                   1-2              30

Med                   3-4              20

High                  5-6              20

Timber (Larch):

Immature 45 % Mature 50 % Overmature 5 %

Land Use:

Timber 100 % Recreation - %

STAND NO. 30

Location T 12S R 10E Sec 7,8,9,15,16,17,18 Stand Composition (% BA of total):

Acres (est.) 650

Larch 5-10 % P. pine 25 %

Recommended Treatment: J

D. fir 20 % G. fir 50 %

Priority: (Timber) 1 (Recreation) -

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              25

Low                   1-2              35

Med                   3-4              15

High                  5-6              25

Timber (Larch):

Immature 50 % Mature 25 % Overmature 25 %

Land Use:

Timber 100 % Recreation        %

STAND NO. 31

Location T 12S R 10E Sec. 29,30,31,32

Stand Composition (% BA of total):

Acres (est.) 500

Larch 10 % P. pine 30 %

Recommended Treatment: E

D. fir 20 % G. fir 40 %

Priority: (Timber) 2 (Recreation) -

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              80

Low                   1-2              5-10

Med                   3-4              5

High                  5-6              5

Timber (Larch):

Immature 70 % Mature 10 % Overmature 20 %

Land Use:

Timber 100 % Recreation - %

STAND NO. 32

Location T 12S R 10E Sec. 5, 6, 7, 8, 9

Acres (est.) 190

Recommended Treatment: E

Priority: (Timber) 2 (Recreation) -

Stand Composition (% BA of total):

Larch 5 % P. pine 25 %

D. fir 50 % G. fir 20 %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              60

Low                   1-2              20

Med                   3-4              10

High                  5-6              10

Timber (Larch):

Immature 70 % Mature 20 % Overmature 10 %

Land Use:

Timber 100 % Recreation - %

STAND NO. 33

Location T 12S R 10E Sec. 3, 4, 5, 9, 10, 11 Stand Composition (% BA of total):

Acres (est.) 510

Recommended Treatment: S

Priority: (Timber) 1 (Recreation) -

Larch 20 % P. pine 30 %

D. fir 30 % G. fir 20 %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              25

Low                   1-2              15

Med                   3-4              15

High                  5-6              45

Timber (Larch):

Immature 10 % Mature 25 % Overmature 65 %

Land Use:

Timber 100 % Recreation - %

STAND NO. 34

Location T 12S R 10E Sec. 6, 7

Acres (est.) 150

Recommended Treatment: 0

Priority: (Timber) 2 (Recreation) -

Mistletoe Level      DMR      % of Larch

0                      0                      20

Low                   1-2                   20

Med                   3-4                   20

High                   5-6                   40

Stand Composition (% BA of total):

Larch 5 % P. pine 25 %

D. fir 20 % G. fir 50 %

Incense cedar        % Other        %

Timber (Larch):

Immature 20 % Mature 30 % Overmature 50 %

Land Use:

Timber 100 % Recreation - %

STAND NO. 35

Location T 11+12 R 10E Sec. 34+3,4,5

Acres (est.) 175

Recommended Treatment: S

Priority: (Timber) 1 (Recreation) -

Mistletoe Level      DMR      % of Larch

0                      0                      10

Low                   1-2                   20

Med                   3-4                   30

High                   5-6                   40

Stand Composition (% BA of total):

Larch 5 % P. pine 25 %

D. fir 55 % G. fir 10 %

Incense cedar 5 % Other        %

Timber (Larch):

Immature 5 % Mature 40 % Overmature 55 %

Land Use:

Timber 100 % Recreation - %



STAND NO. 36

Location T 11S R 10E Sec. 8, 9

Acres (est.) 200

Recommended Treatment: H

Priority: (Timber) 3 (Recreation) -

Stand Composition (% BA of total):

Larch 60 % P. pine 20 %

D. fir 20 % G. fir        %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              30

Low                   1-2              10

Med                   3-4              20

High                  5-6              40

Timber (Larch):

Immature 60 % Mature 40 % Overmature        %

Land Use:

Timber 100 % Recreation        %

Larch casebearer and Meria laricis are both fairly heavy.

STAND NO. 37

Location T 11S R 10E Sec. 15, 16

Acres (est.) 75

Recommended Treatment: E

Priority: (Timber) 2 (Recreation) -

Stand Composition (% BA of total):

Larch 30 % P. pine 30 %

D. fir 30 % G. fir 10 %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              80

Low                   1-2              10

Med                   3-4              5

High                  5-6              5

Timber (Larch):

Immature 90 % Mature 5 % Overmature 5 %

Land Use:

Timber 100 % Recreation - %

Larch casebearer and Meria laricis are both fairly heavy.

STAND NO. 38

Location T 11S R 10E Sec. 8, 15, 16, 17

Acres (est.) 445

Recommended Treatment: S

Priority: (Timber) 1 (Recreation) -

Stand Composition (% BA of total):

Larch 15 % P. pine 30 %

D. fir 35 % G. fir 20 %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              10

Low                   1-2              10

Med                   3-4              10

High                  5-6              70

Timber (Larch):

Immature 20 % Mature 20 % Overmature 60 %

Land Use:

Timber 100 % Recreation - %

STAND NO. 39

Location T 11S R 10E Sec. 20, 21

Acres (est.) 90

Recommended Treatment: S

Priority: (Timber) 1 (Recreation) -

Stand Composition (% BA of total):

Larch 15 % P. pine 30 %

D. fir 35 % G. fir 10 %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              5

Low                   1-2              5

Med                   3-4              25

High                  5-6              65

Timber (Larch):

Immature 15 % Mature 35 % Overmature 50 %

Land Use:

Timber 100 % Recreation - %

STAND NO. 40

Location T 11S R 10E Sec. 16, 21, 22, 28

Acres (est.) 380

Recommended Treatment: M

Priority: (Timber) 1 (Recreation) -

Stand Composition (% BA of total):

Larch 2-5 % P. pine 0-30 %

D. fir 20-30 % G. fir 20-30 %

Incense cedar 10-20 % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              30

Low                    1-2              20

Med                    3-4              20

High                   5-6              30

Timber (Larch):

Immature 25-35 % Mature 40 % Overmature 25-35 %

Land Use:

Timber 100 % Recreation - %

Shelterwood harvests are currently being conducted in the area.

STAND NO. 41

Location T 11S R 10E Sec. 20, 21

Acres (est.) 100

Recommended Treatment: I

Priority: (Timber) 3 (Recreation) -

Stand Composition (% BA of total):

Larch 5-10 % P. pine 20 %

D. fir 40 % G. fir 20 %

Incense cedar 10 % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              25-30

Low                    1-2              20

Med                    3-4              25

High                   5-6              20-25

Timber (Larch):

Immature 35 % Mature 45 % Overmature 20 %

Land Use:

Timber 100 % Recreation - %

STAND NO. 42

Location T 11S R 10E Sec. 19,20,21,28,29

Acres (est.) 200

Recommended Treatment: I

Priority: (Timber) 3 (Recreation) -

Stand Composition (% BA of total):

Larch 5-10 % P. pine 20 %

D. fir 40 % G. fir 20 %

Incense cedar 10 % Other        %

Mistletoe Level      DMR      % of Larch

0                      0      25-30

Low                   1-2      20

Med                   3-4      25

High                  5-6      20-25

Timber (Larch):

Immature 35 % Mature 45 % Overmature 20 %

Land Use:

Timber 100 % Recreation - %

STAND NO. 43

Location T 11S R 10E Sec. 28, 29

Acres (est.) 100

Recommended Treatment: I

Priority: (Timber) 3 (Recreation) -

Stand Composition (% BA of total):

Larch 5-10 % P. pine 20 %

D. fir 40 % G. fir 20 %

Incense cedar 10 % Other        %

Mistletoe Level      DMR      % of Larch

0                      0      25-30

Low                   1-2      20

Med                   3-4      25

High                  5-6      20-25

Timber (Larch):

Immature 35 % Mature 45 % Overmature 20 %

Land Use:

Timber 100 % Recreation - %

STAND NO. 44

Location T 11S R 10E Sec. 31, 32, 33

Acres (est.) 140

Recommended Treatment: G

Priority: (Timber) 3 (Recreation) -

Stand Composition (% BA of total):

Larch 2-5 % P. pine 20 %

D. fir 40 % G. fir 35 %

Incense cedar 5 % Other    %

Mistletoe Level      DMR      % of Larch

0                      0              30

Low                   1-2              30

Med                   3-4              20

High                  5-6              20

Timber (Larch):

Immature 35 % Mature 60 % Overmature 5 %

Land Use:

Timber 100 % Recreation - %

Douglas-fir is heavily infected with dwarf mistletoe.

STAND NO. 45

Location T 11S R 10E Sec. 27, 28, 29, 30

Acres (est.) 200

Recommended Treatment: S

Priority: (Timber) 3 (Recreation) -

Stand Composition (% BA of total):

Larch 5-10 % P. pine 30 %

D. fir 10-40 % G. fir 10-30 %

Incense cedar    % Other    %

Mistletoe Level      DMR      % of Larch

0                      0              20

Low                   1-2              20

Med                   3-4              20

High                  5-6              40

Timber (Larch):

Immature 20 % Mature 70 % Overmature 10 %

Land Use:

Timber 100 % Recreation    %

Dwarf mistletoe is somewhat heavier towards the upper (eastern) section of the stand.

STAND NO. 48

Location T 12S R 9E Sec. 33

Acres (est.) 2

Recommended Treatment: C

Priority: (Timber) 5 (Recreation) -

Stand Composition (% BA of total):

Larch 30-40 % P. pine 60-70 %

D. fir \_\_\_\_\_ % G. fir \_\_\_\_\_ %

Incense cedar \_\_\_\_\_ % Other \_\_\_\_\_ %

Mistletoe Level      DMR      % of Larch

0                      0              100

Low                    1-2              ---

Med                    3-4              ---

High                   5-6              ---

Timber (Larch):

Immature 80 % Mature 20 % Overmature - %

Land Use:

Timber 100 % Recreation - %

STAND NO. 49

Location T 13S R 9E Sec. 5, 6, 7, 8

Acres (est.) 60

Recommended Treatment: F

Priority: (Timber) 5 (Recreation) -

Stand Composition (% BA of total):

Larch 20 % P. pine 65 %

D. fir \_\_\_\_\_ % G. fir 15 %

Incense cedar \_\_\_\_\_ % Other \_\_\_\_\_ %

Mistletoe Level      DMR      % of Larch

0                      0              90

Low                    1-2              10

Med                    3-4              ---

High                   5-6              ---

Timber (Larch):

Immature 70 % Mature 30 % Overmature - %

Land Use:

Timber 100 % Recreation - %

Overstory ponderosa pine is marked for cutting.

STAND NO. 50

Location T 13S R 9E Sec. 5

Acres (est.) 40

Recommended Treatment: C

Priority: (Timber) 5 (Recreation) 5

Stand Composition (% BA of total):

Larch 5 % P. pine 95 %

D. fir \_\_\_\_\_ % G. fir \_\_\_\_\_ %

Incense cedar \_\_\_\_\_ % Other \_\_\_\_\_ %

Mistletoe Level      DMR      % of Larch

0                      0              80

Low                      1-2              20

Med                      3-4              --

High                      5-6              --

Timber (Larch):

Immature 80 % Mature 20 % Overmature - %

Land Use:

Timber 90 % Recreation \*10 %

\*Horse trail.

STAND NO. 51

Location T 12S R 9E Sec. 32, 33, 34

Acres (est.) 160

Recommended Treatment: C

Priority: (Timber) 5 (Recreation) -

Stand Composition (% BA of total):

Larch 15 % P. pine 85 %

D. fir \_\_\_\_\_ % G. fir \_\_\_\_\_ %

Incense cedar \_\_\_\_\_ % Other \_\_\_\_\_ %

Mistletoe Level      DMR      % of Larch

0                      0              100

Low                      1-2              ---

Med                      3-4              ---

High                      5-6              ---

Timber (Larch):

Immature 60 % Mature 40 % Overmature - %

Land Use:

Timber 100 % Recreation - %

STAND NO. 52

Location T 12S R 9E Sec. 20, 21

Acres (est.) 150

Recommended Treatment: G

Priority: (Timber) 4 (Recreation) -

Stand Composition (% BA of total):

Larch 5 % P. pine 90 %

D. fir \_\_\_\_\_ % G. fir 5 %

Incense cedar \_\_\_\_\_ % Other \_\_\_\_\_ %

Mistletoe Level      DMR      % of Larch

0                      0                      80

Low                      1-2                      15

Med                      3-4                      5

High                      5-6                      \_\_\_\_\_

Timber (Larch):

Immature 90 % Mature 10 % Overmature \_\_\_\_\_ %

Land Use:

Timber 100 % Recreation - %

STAND NO. 53

Location T 12S R 9E Sec. 6

Acres (est.) 160

Recommended Treatment: C

Priority: (Timber) 5 (Recreation) \_\_\_\_\_

Stand Composition (% BA of total):

Larch 60 % P. pine \_\_\_\_\_ %

D. fir 30 % G. fir 10 %

Incense cedar \_\_\_\_\_ % Other \_\_\_\_\_ %

Mistletoe Level      DMR      % of Larch

0                      0                      80

Low                      1-2                      20

Med                      3-4                      \_\_\_\_\_

High                      5-6                      \_\_\_\_\_

Timber (Larch):

Immature 20 % Mature 80 % Overmature \_\_\_\_\_ %

Land Use:

Timber 100 % Recreation \_\_\_\_\_ %

Most of the stand is unroaded.



STAND NO. 54

Location T 12S R 9E Sec. 7+18

Acres (est.) 380

Recommended Treatment: S

Priority: (Timber) 1 (Recreation) -

Stand Composition (% BA of total):

Larch 2 % P. pine 20 %

D. fir 30 % G. fir 50 %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0                      5

Low                    1-2                    10

Med                    3-4                    10

High                   5-6                    80

Timber (Larch):

Immature 50 % Mature 50 % Overmature        %

Land Use:

Timber 100 % Recreation        %

STAND NO. 55

Location T 13S R 8E Sec. 10, 11, 12

Acres (est.) 310

Recommended Treatment: N

Priority: (Timber) 1 (Recreation) 1

Stand Composition (% BA of total):

Larch 5 % P. pine 5 %

D. fir 50 % G. fir 40 %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0                      0

Low                    1-2                    10

Med                    3-4                    40

High                   5-6                    50

Timber (Larch):

Immature - % Mature 10 % Overmature 90 %

Land Use:

Timber 50 % Recreation 50 %

Douglas-fir is heavily infested with dwarf mistletoe.

Mortality is occurring in the larch.

STAND NO. 56

Location T 12S R 8E Sec. 22

Acres (est.) 100

Recommended Treatment: C

Priority: (Timber) 5 (Recreation) -

Mistletoe Level      DMR      % of Larch

0                      0              90

Low                   1-2              10

Med                   3-4              --

High                  5-6              --

Stand Composition (% BA of total):

Larch 5-10 % P. pine        %

D. fir 35 % G. fir 35 %

Incense cedar        % Other 15 %

Timber (Larch):

Immature 80 % Mature 20 % Overmature        %

Land Use:

Timber 100 % Recreation        %

STAND NO. 57

Location T 12S R 8E Sec. 23

Acres (est.) 3

Recommended Treatment: N

Priority: (Timber) 1 (Recreation) -

Mistletoe Level      DMR      % of Larch

0                      0              0

Low                   1-2              20

Med                   3-4              40

High                  5-6              40

Stand Composition (% BA of total):

Larch 15 % P. pine        %

D. fir 45 % G. fir 20 %

Incense cedar        % Other 20 %

Timber (Larch):

Immature        % Mature 40 % Overmature 60 %

Land Use:

Timber 100 % Recreation        %

STAND NO. 58

Location T 12S R 8E Sec. 25, 26

Acres (est.) 85

Recommended Treatment: S

Priority: (Timber) 1 (Recreation) -

Stand Composition (% BA of total):

Larch 5 % P. pine 5 %

D. fir 70 % G. fir 20 %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0                      0

Low                    1-2                    10

Med                    3-4                    10

High                   5-6                    80

Timber (Larch):

Immature - % Mature 10 % Overmature 90 %

Land Use:

Timber 100 % Recreation - %

STAND NO. 59

Location T 11+12S R 9 Sec. 34, 35+2

Acres (est.) 240

Recommended Treatment: P

Priority: (Timber) 2 (Recreation) 3

Stand Composition (% BA of total):

Larch 30 % P. pine 40 %

D. fir 20 % G. fir - %

Incense cedar 10 % Other - %

Mistletoe Level      DMR      % of Larch

0                      0                      20

Low                    1-2                    20

Med                    3-4                    20

High                   5-6                    40

Timber (Larch):

Immature 20 % Mature 60 % Overmature 20 %

Land Use:

Timber 40 % Recreation 60 %

STAND NO. 60

Location T 12S R 9E Sec. 11

Acres (est.) 30

Recommended Treatment: B

Priority: (Timber) 4 (Recreation) 3

Stand Composition (% BA of total):

Larch 10-15 % P. pine 65 %

D. fir 15 % G. fir        %

Incense cedar 5 % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              60

Low                    1-2              30

Med                    3-4              5

High                   5-6              5

Timber (Larch):

Immature 50 % Mature 35 % Overmature 10 %

Land Use:

Timber 20 % Recreation 80 %

Stand has been salvaged in the past.

STAND NO. 61

Location T 12S R 9E Sec. 11, 14

Acres (est.) 40

Recommended Treatment: \*

Priority: (Timber) - (Recreation) -

Stand Composition (% BA of total):

Larch 35 % P. pine 45 %

D. fir 20 % G. fir        %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              10

Low                    1-2              20

Med                    3-4              30

High                   5-6              40

Timber (Larch):

Immature<sup>25</sup>        % Mature 20 % Overmature 55 %

Land Use:

Timber - % Recreation 100 %

\*Private ownership.

STAND NO. Camp Sherman C.G.

Location T 13S R 9E Sec. 10

Acres (est.) 5

Recommended Treatment: A

Priority: (Timber) - (Recreation) 5

Stand Composition (% BA of total):

Larch 10 % P. pine 90 %

D. fir        % G. fir        %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              90

Low                    1-2              10

Med                    3-4                    

High                   5-6                    

Timber (Larch):

Immature 90 % Mature 10 % Overmature        %

Land Use:

Timber        % Recreation 100 %

STAND NO. 62

Location T 13S R 9E Sec. 10

Acres (est.) 30

Recommended Treatment: A

Priority: (Timber) - (Recreation) 5

Stand Composition (% BA of total):

Larch 10 % P. pine 90 %

D. fir        % G. fir        %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              90

Low                    1-2              10

Med                    3-4                    

High                   5-6                    

Timber (Larch):

Immature 90 % Mature 10 % Overmature        %

Land Use:

Timber - % Recreation 100 %

STAND NO. Pioneer Ford C.G.

Location T 12S R 9E Sec. 2

Acres (est.) 5

Recommended Treatment: Q

Priority: (Timber) - (Recreation) 1

Stand Composition (% BA of total):

Larch 40 % P. pine        %

D. fir 50 % G. fir        %

Incense cedar 10 % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              10

Low                    1-2              20

Med                    3-4              20

High                   5-6              50

Timber (Larch):

Immature 25 % Mature 35 % Overmature 40 %

Land Use:

Timber - % Recreation 100 %

STAND NO. Gorge C.G.

Location T 12S R 9E Sec. 34

Acres (est.) 3

Recommended Treatment: A

Priority: (Timber) - (Recreation) 5

Stand Composition (% BA of total):

Larch 5 % P. pine 95 %

D. fir        % G. fir        %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              90

Low                    1-2              10

Med                    3-4                    

High                   5-6                    

Timber (Larch):

Immature - % Mature 100 % Overmature        %

Land Use:

Timber - % Recreation 100 %

STAND NO. Pine Rest Campground

Location T 12S R 9E Sec. 34

Acres (est.) 4

Recommended Treatment: A

Priority: (Timber) - (Recreation) 5

Stand Composition (% BA of total):

Larch 10 % P. pine 90 %

D. fir        % G. fir        %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              100

Low                    1-2                    

Med                    3-4                    

High                   5-6                    

Timber (Larch):

Immature 50 % Mature 50 % Overmature        %

Land Use:

Timber        % Recreation 100 %

STAND NO. Smiling River Campground

Location T 13S R 9E Sec. 3

Acres (est.) 5

Recommended Treatment: V

Priority: (Timber) - (Recreation) 3

Stand Composition (% BA of total):

Larch 90 % P. pine 10 %

D. fir        % G. fir        %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              0

Low                    1-2              10

Med                    3-4              10

High                   5-6              80

Timber (Larch):

Immature 10 % Mature 10 % Overmature 80 %

Land Use:

Timber - % Recreation 100 %

STAND NO. 63

Location T 12S R 10E Sec. 16,17,18,21

Acres (est.) 125

Recommended Treatment: G

Priority: (Timber) 3 (Recreation) -

Stand Composition (% BA of total):

Larch 2 % P. pine 25 %

D. fir 25 % G. fir 45 %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              25

Low                   1-2              25

Med                   3-4              20

High                  5-6              30

Timber (Larch):

Immature 60 % Mature 20 % Overmature 20 %

Land Use:

Timber 100 % Recreation - %

STAND NO. 64

Location T 11S R 10E Sec. 4+9

Acres (est.) 40

Recommended Treatment: L

Priority: (Timber) 1 (Recreation) -

Stand Composition (% BA of total):

Larch 5-10 % P. pine 45 %

D. fir 45 % G. fir        %

Incense cedar        % Other        %

Mistletoe Level      DMR      % of Larch

0                      0              10

Low                   1-2              10

Med                   3-4              30

High                  5-6              50

Timber (Larch):

Immature 25 % Mature 35 % Overmature 40 %

Land Use:

Timber 100 % Recreation - %



Table B. Area (acres) of Larch Stands in Priority of Treatment Categories by Major Land Use.

Priority of Treatment	Timber Lands	Recreation Lands
1	6,895	1,138
2	2,726	105
3	5,340	298
4	971	377
5	518	46
Total	16,450	1,957
Grand Total		18,414

Table C. Area (acres) of Larch Stands Within Priority of Treatment Categories by Larch Composition

		Total larch in stand (percent basal area of total)							
Priority of Treatment		1-5	6-10	11-20	21-30	31-40	41-60	>60	Totals
1 (high)		3,420	690	1,466	440	5	2,012	--	8,033
2		930	1,380	--	171	--	350	--	2,831
3		565	4,183	88	144	--	653	5	5,638
4		150	637	6	400	--	155	--	1,348
5 (low)		43	139	220	--	2	160	--	564
Totals		5,108	7,029	1,780	1,155	7	3,330	5	18,414

Separate priority of treatment ratings were given timber lands and recreation lands, and portions of single stands where each of these activities plays the major role (Table A, Figure 2). Five separate priority levels were established and assigned to the timber and/or recreation portion of each stand based on need of treatment. Stands rated 1 are in greatest need of treatment while stands rated 5 are essentially healthy.

On the basis of total acreage, 41.9% of the timber-producing stands containing larch and 57.3% of the recreation lands with larch met priority 1 criteria. This represents 6,895 acres of timber lands and 1,138 acres of recreation lands (Table B). Larch stands which were healthy or have only light infection levels (Priority Level 5) include only 3.1% (518 acres) of timber lands and 2.3% (46 acres) of recreation lands.

Stand species composition by percent basal area was estimated for each stand (Table A). Larch composition was as great as 90%, yet most stands contained 10% or less of this species (Figure 3, Table C). On the basis of total area with larch, 5,108 acres (27.7%) had stands which were 1 to 5 percent larch and 7,029 acres (38.2%) had stands which were 6 to 10 percent larch. Of the 5,108 acres identified to have 1 to 5 percent larch, 3,420 (66.9%) were given the highest priority of treatment value (one). In the stands containing 6 to 10 percent larch 59.5% (4,183 acres) were given priority of treatment values of 3 (Table C).

#### Recommended Treatments

The following twenty-one recommended treatments were developed as tools to meet the management objectives that have been identified:

A. Defer treatment. The stand is in a sensitive area and is relatively healthy.

B. Salvage the few older heavily-infected trees where possible. The remaining stand is relatively healthy.

C. Defer treatments at the present since this is a healthy, maturing stand. Use a seed tree or shelterwood harvest upon maturity to perpetuate larch.

D. Defer treatments until maturity. The immature timber has a very light dwarf mistletoe infestation and the stand is unroaded.

E. Remove the heavily infected large trees. The remaining stand should be allowed to mature.

F. Following overstory removal of ponderosa pine, defer treatment to the understory until maturity.

G. Remove the scattered heavily infected overstory trees and any infected understory trees with a dwarf mistletoe rating of 3 or greater as long as minimum stocking levels are maintained. This should be done during normal stand entries.

H. Precommercial thinning would be beneficial. Noninfected crop trees should be favored.

I. Use small regenerative harvests (seed tree/shelterwood) since this stand is in a drainage. Healthy or lightly infected larch should be favored as the leave trees where opportunities permit. Remove this overstory when regeneration is well established.

J. Salvage the heavily infected, dead and dying trees where possible. Remove the few heavily infected overstory trees which are overtopping a relatively healthy well-stocked understory. The stand should be inspected several years following cutting to determine if a precommercial thinning is needed to remove infected trees and/or reduce stocking levels.

K. Many large overmature larch which are heavily infected with dwarf mistletoe are overtopping an understory of larch and ponderosa pine. Remove overstory trees where possible and thin infected trees from the understory to proper stocking levels. Small group selection or clear cuts should be used where the understory is heavily infected or understocked. Proper site preparation will aid in the establishment of larch regeneration.

L. this is an overmature stand with heavy dwarf mistletoe infection in all species. Mortality is occurring. Large unit regeneration harvests (clearcuts) are recommended. To prevent reinfection following harvest, a buffer strip around the perimeter of the unit should be planted with a tree species not susceptible to the species of mistletoe present in the edge trees.

M. Use regenerative harvest methods (shelterwood/seed tree) favoring healthy or lightly infected larch. There is a heavy understory of grand fir which is minimizing the regeneration of larch and should be removed in harvest units. Remove heavily infected trees during current harvest operations.

N. Dead and dying trees are numerous and should be salvaged. Where possible, have group selection or small clearcut harvests which include heavily infected larch and Douglas-fir. Following harvest, proper site preparation, such as burning followed by scarification, should be used to encourage larch regeneration.

O. Salvage operations have removed most heavily infected, dead and dying trees. Continue the salvage program when and where it is required. Small group selection or clearcut harvest should be used to aid in the establishment of healthy larch regeneration.

P. Salvage heavily infected trees in sensitive areas. Shelterwood harvests with wide enough spacing to permit regeneration should also be attempted in sensitive areas. Where adequate numbers of healthy or lightly infected larch leave trees do not exist, interplanting of larch under other species may aid in establishing larch regeneration. In less sensitive areas, small clearcuts or group selection harvests should be done, where possible, to promote the establishment of larch regeneration.

Q. Remove dead and dying trees in sensitive areas.

R. Remove dead and dying trees and heavily infected trees where possible. Prune infected limbs from smaller trees near summer homes.

S. Harvest those trees heavily infected with dwarf mistletoe. Shelterwood or seed tree harvests favoring healthy or lightly infected larch leave trees would aid in the establishment of larch regeneration. In areas of high infection, small clearcuts, or group selection harvests should promote establishment of healthy larch.

T. Remove dead and dying trees in sensitive areas. In less frequented areas, conduct seed tree or shelterwood harvests favoring healthy or lightly infected larch as the leave trees.

U. This campground contains many overmature larch which are heavily infected with dwarf mistletoe. Few immature or overmature larch are present. Monitor this area and remove dying trees in the future.

### Conclusions

Dwarf mistletoes are a serious management problem on the Sisters District. Most tree species are infected, but levels of infection are especially high in larch stands. While the formulation of management recommendations presented in this report is primarily based on the stand age and mistletoe status in larch, other factors must be considered prior to implementation of actual prescriptions. These include other resources affected by these actions, as well as other stand conditions. In many stands examined, Douglas-fir (*Pseudotsuga menziesii*) was also heavily infected with dwarf mistletoe. This tree often is the predominant species in stands containing larch. Management plans should include and consider this species also.

Larch is a seral species requiring some soil disturbance such as fire or logging to assure regeneration success. Since fire no longer plays its former role in forest systems due to suppression activities, many stands have not had a fire for 65-75 years. Under natural conditions these stands experienced a light fire approximately every 10 years. The exclusion of fire has reduced the number of regenerating larch while more shade-tolerant species, such as grand fir (*Abies grandis*) are increasing. Silvicultural activities such as small group selection or clearcuts (Plate 3) favor regeneration of larch. Pocket gopher-induced mortality does not appear to be as serious a problem in such small cutting units as in larger ones.

In recreation areas perpetuation of larch is difficult because the silvicultural options are limited. Where possible, the use of small group selection cuts should be attempted to encourage the regeneration of larch. Action aimed at maintaining existing trees is usually limited to pruning infected limbs, and this is practical only on smaller trees. Unfortunately, in heavily infected, heavily used areas, the only management option is to remove dead and dying trees. Unless regeneration is established, the proportion of larch in these stands will diminish.

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Plate 1

Larch dwarf mistletoe  
plant (female). Note  
ripe berries.



Plate 2

Larch trees heavily infected  
with dwarf mistletoe.



Plate 3

Opening created following group  
selection harvest. Note larch  
regeneration.